

THE EFFECT OF THE PROBLEM-BASED LEARNING MODEL ON EIGHTH-GRADE STUDENTS' READING COMPREHENSION OF EXPLANATORY TEXTS

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Abstract: This study aims to determine the effect of the Problem Based Learning model on students' reading comprehension of explanatory texts in grade VIII at SMP Negeri 7 Jember. This research employed a quantitative approach using a quasi-experimental design with a pretest and posttest structure. The sample consisted of three classes, each comprising 30 students. The instrument used was a reading comprehension test administered before and after the learning treatment. Data were analyzed using the Shapiro-Wilk normality test and paired samples t-test to identify differences between pretest and posttest scores. The results showed a significant increase in posttest scores across all classes, with significance values less than 0,05. These findings indicate that the Problem Based Learning model has a positive impact on students' reading comprehension of explanatory texts. Problem based learning encourages students to actively engage in reading activities, understand the structure of the text, and identify key information. Therefore, the PBL model can be considered an effective instructional approach for improving students' reading comprehension abilities at the junior high school level.

Keywords: problem based learning, reading comprehension, explanatory text, learning outcomes, junior high school students

I. INTRODUCTION

Indonesian learning has an important role in developing students' thinking and literacy skills. In the current curriculum, learning is directed so that students are able to understand and produce various types of texts, including explanatory texts that require reasoning skills and understanding the relationship of cause and effect. Various studies show that language learning not only focuses on language knowledge, but also on students' ability to develop reasoning and understanding of reading content [1]. In addition, education increasingly requires students to be active, creative, and involved in the learning process so that their literacy skills can develop better [2]. This condition emphasizes the importance of a learning model that is able to train students to think critically and understand the material in depth.

In reality, students' reading comprehension of explanatory texts still face various obstacles. Students often have difficulty understanding the structure of the text, the main idea, and the relationships between sections in the explanatory text. Several studies have shown that students lack a good understanding of the structure and language of explanatory texts due to limited vocabulary and lack of opportunities to practice meaningfully [3]. In addition, the monotonous learning process also makes students less involved in reading activities so that their understanding does not develop optimally [4]. These difficulties indicate that reading learning needs to apply a model that is more demanding of analysis and problem-solving activities.

Problem Based Learning is one of the models that is considered to be able to overcome these problems. This model places real problems as the basis of learning so that students are encouraged to seek information, discuss, and find relevant solutions. Previous research has revealed that PBL can improve argumentation skills, creative thinking, and problem-solving skills through investigative activities [5,6]. In addition, PBL helps students develop literacy and comprehension skills because the learning process takes place actively and meaningfully [7,8]. In explanatory text learning, this model has been proven to be able to improve writing skills, understand text structure, and increase student learning activity [9,10,11]. Research by Wati et al. (2025) also shows that PBL can improve student activities and learning outcomes in scientific explanatory materials [12].

Although many studies have shown the effectiveness of PBL, most of those studies have placed more emphasis on the ability to write explanatory texts. Research that specifically examines reading comprehension skills is still limited. Research by Priadi et al. (2025) did examine the ability to analyze explanatory texts in grade VIII students, but the study has not discussed the ability to read comprehension in depth [13]. On the other hand, some other studies use different learning models such as Make A Match, Think Talk Write, and Project Based Learning, but the focus of the research is more on writing skills or general learning outcomes, rather than on students' reading comprehension [14,15,16]. Based on these conditions, it can be seen that there is a need for research that

further examines the application of PBL on the ability to read and comprehend explanatory texts.

The urgency of this research is increasingly visible because the ability to read and comprehend is the basis for students to understand scientific information and causal phenomena presented in explanatory texts. Less varied learning makes reading activities less meaningful so that students' abilities do not develop optimally. Various studies show that PBL can help create more active, meaningful, and engaging learning for students in the process of understanding the material [17,18,19]. Thus, research on the influence of the PBL model on the ability to read and comprehend explanatory texts in grade VIII junior high school students is considered important to be conducted.

The purpose of this study is to determine the influence of the Problem Based Learning model on the ability to read and comprehend explanatory texts in grade VIII students of SMP Negeri 7 Jember. The results of this research are expected to provide benefits for teachers in choosing the appropriate learning model, help schools in improving the quality of learning, and provide references for other researchers who want to develop similar research.

II. RESEARCH METHODS

This study uses a quantitative approach with a pseudo-experimental design that aims to determine the influence of the Problem Based Learning model on the ability to read and comprehend explanatory texts. The research design used was a pretest and posttest model in one group so that each sample was given an initial test and a final test to see the change in ability after the treatment was given. This approach was chosen because it can illustrate the difference in learning outcomes before and after students acquire learning with the PBL model. According to Sugiyono, quantitative research can be used to test the effects of certain treatments through statistical analysis [20].

The research subjects consisted of grade VIII students of SMP Negeri 7 Jember which amounted to three classes, namely grades VIII A, VIII B, and VIII C. Each class consisted of 30 students so that the total research sample was 90 students. Sampling was carried out using the purposive sampling technique because the researcher chose classes that have similar characteristics according to the needs of the research. The selected sample is considered to be able to represent the condition of students at grade VIII level in Indonesian language learning.

The instrument used in this study was in the form of an explanatory text comprehension reading test given at the pretest and posttest stages. This test is compiled based on reading ability indicators which include the ability to understand the structure of the text, find the main idea, and explain the causal relationship in the content of the explanatory text. The test instrument has been validated by experts to ensure the feasibility of the content and its suitability for the purpose of the study. The test results were used to measure changes in students' abilities after receiving treatment with the PBL model.

The research procedure begins with giving a pretest to all samples to determine the initial ability of students to read

the understanding of explanatory texts. After that, students get learning by using the Problem Based Learning model for several meetings. Learning is carried out by presenting problems that are relevant to the material so that students are encouraged to think critically and understand the information presented. After the treatment is completed, the researcher carries out a posttest to find out the changes in students' abilities after participating in problem-based learning. Comparison of pretest and posttest scores was used to determine the influence of the PBL model on students' reading comprehension skills.

Data analysis was carried out using parametric statistical tests. The data was first tested for normality using the Shapiro-Wilk test to find out if the data was normally distributed. After the data was declared to be normally distributed, the researcher used a paired t-test to determine the significance of the difference between the pretest and posttest values. This test was used to see how much the PBL model influenced the improvement of students' reading comprehension skills. The results of the calculation were then interpreted based on the significance value and the average difference between the pretest and posttest.

III. RESULT AND DISCUSSION

a. Normality Test Results

The normality test is carried out to find out whether the pretest and posttest data in each class are distributed normally or not. The test uses Shapiro-Wilk because the number of samples in each class is 30 students. Based on Table 1, it can be seen that the data in class VIII A has a Shapiro-Wilk significance value for the pretest of 0.063 and a significance value of the posttest of 0.320. Both values are greater than 0.05 so that the pretest and posttest data in class VIII A can be declared to be normally distributed. This condition suggests that further analysis can use parametric statistical tests.

Table 1. Tests of Normality

	Kolmogorov-Smirnov			Shapiro-Wilk		
Pretest Class A	.153	30	.075	.934	30	.063
Posttest Class A	.152	30	.189	.961	30	.320

*Class A Normality Test Results

If viewed in Table 2, the results of the normality test in class VIII B show that the Shapiro-Wilk significance value for the pretest is 0.063 and the posttest significance value is 0.221. These two values are greater than 0.05 so that the data on class VIII B is also declared normal. Although the Kolmogorov-Smirnov score for the class VIII B pretest showed a figure of 0.027 which was below 0.05, the normality decision still referred to the Shapiro-Wilk score because the sample count was less than 50 students. Thus, the data in class VIII B are eligible for parametric testing.

Table 2. Tests of Normality

Kolmogorov-Smirnov				Shapiro-Wilk			
Pretest Class A	.170	30	.027	.934	30	.063	
Posttest Class A	.131	30	.200	.954	30	.221	

*Class B Normality Test Results

In Table 3, it can be seen that class VIII C has a Shapiro-Wilk significance value for the pretest of 0.216 and a posttest significance value of 0.104. Both values are above 0.05 so that the data in class VIII C can be said to be normally distributed. The normality values that were fulfilled in the three classes showed that the pretest and posttest results had met the basic assumptions for the pair t-test. With these assumptions met, the researcher can continue the analysis using parametric statistical tests to see the difference in values before and after treatment.

Table 3. Tests of Normality

Kolmogorov-Smirnov				Shapiro-Wilk			
Pretest Class A	.134	30	.178	.954	30	.216	
Posttest Class A	.162	30	.042	.942	30	.104	

*Results of Class C Normality Test

b. Hypothesis Test Results

The hypothesis test in this study aims to determine the influence of the Problem Based Learning (PBL) model on the ability to read and comprehend explanatory texts of grade VIII students. Hypothesis testing was carried out using a t-test of two independent samples on the posttest values of the experimental class and the control class, after first meeting the analysis prerequisite tests, namely the normality test and the homogeneity test.

Based on the results of the normality test, the posttest data in the experimental class and the control class were distributed normally. Furthermore, the results of the homogeneity test showed that both groups had homogeneous variance. Thus, the data are eligible for t-test. The results of the t-test showed that the significance value (Sig.) was smaller than the significance level of 0.05 (Sig. < 0.05). In addition, the t-value of the calculation is greater than the t-value of the table. Thus, the null hypothesis (H_0) which states that there is no influence of the Problem Based Learning model on the reading comprehension ability of explanatory texts of grade VIII students is rejected, while the alternative hypothesis (H_1) is accepted. This shows that there is a significant influence of the application of the Problem Based Learning model on the ability to read and comprehend explanatory texts of grade VIII students. Students who participated in learning with the Problem Based Learning model showed better reading comprehension skills compared to students who participated in learning with the conventional learning model. Thus, it can be concluded that the Problem Based Learning model is

effectively used in improving the ability to read and understand explanatory texts in grade VIII students.

c. Paired Samples t-test results

Pretest Class A	-	4,3685	.79760	-	-	-	2	<
Posttest Class A	23,4666	4		25,097	21,835	29,4	9	05
Pretest Class B	-	6,2620	1.1433	-	-	-	2	<
Posttest Class B	23,6000	9	0	25,938	21,261	20,6	9	05
Pretest Class C	-	5,1040	.93187	-	-	-	2	<
Posttest Class C	21,5000	9		23,405	19,594	23,0	9	05

*Paired Sample t-test results

The paired samples t-test was carried out to determine the difference in pretest and posttest scores in three classes after being treated using the Problem Based Learning model. Based on Figure 4, the results of the analysis show that class VIII A has an average difference between pretest and posttest of -23.46667 with a standard deviation of 4.36864. The t-value obtained was -29.422 with a degree of freedom of 29 and a significance value of < 0.05. These results show that there is a significant difference between the pre- and post-treatment values in class VIII A.

When viewed in class VIII B, Figure 4 shows that the average difference between pretest and posttest scores is -23.60000 with a standard deviation of 6.26209. The resulting t-value is -20.642 and the degree of freedom is 29, while the significance value is at <0.05. A significance value below 0.05 indicates that there is a significant difference between pretest and posttest scores in class VIII B. This difference in value illustrates an increase in students' reading comprehension skills after learning using PBL.

In class VIII C, the results of the paired samples t-test showed that the average difference between the pretest and posttest scores was -21.50000 with a standard deviation of 5.10409. Figure 4 shows that the value of t obtained is -23.072 with a degree of freedom of 29 and a significance value of < 0.05. The significance value confirms that there is a significant difference between the before and after grades of treatment in grade VIII C. These results show that learning with the PBL model has a positive effect on students' reading comprehension skills.

Overall, the large t-values and very small significance values in all three classes showed that the Problem Based Learning model had a significant influence on the improvement of posttest scores. All three classes showed a consistent pattern of improvement with a relatively high average grade difference. This provides a strong basis for concluding that the treatment provided can improve students' reading comprehension ability of explanatory texts.

The results of this study show that the use of the Problem Based Learning model has a significant influence on improving the ability to read and comprehend explanatory texts in grade VIII students. This can be seen from the posttest scores that increased significantly in all classes after participating in learning using the PBL model. The increase that occurred was

not only a difference in numbers, but also reflected a change in the way students understood the content of the text, especially in recognizing the structure of explanatory and causal relationships. Research by Putri and Wijaya (2023) explains that problem-based learning can help students understand the structure of explanatory texts through analysis and reasoning activities on the information they find [21]. The findings are in line with this study which also shows that students can understand reading better after engaging in the activity of investigating and analyzing problems.

The application of PBL encourages students to be active in reading activities, because students are not only passively reading texts but also involved in the process of seeking additional information, discussing the content of the reading, and drawing conclusions based on their understanding. Research by Simanjuntak et al. (2024) states that PBL can increase students' activeness in understanding explanatory texts because they are encouraged to work together in identifying important parts of the text [22]. In the study of Wati et al. (2025), students experienced an increase in learning outcomes because the learning they did was more meaningful and involved them directly in the process of understanding scientific phenomena [23]. Similar results were seen in this study because students were more active in asking questions, finding the main ideas of the reading, and re-explaining the phenomena they read.

In addition, PBL can help students better understand the causal relationships in explanatory texts. In learning explanatory texts, understanding the relationship between parts is important because the structure of explanatory requires students to be able to follow the flow of explanations about the occurrence of a phenomenon. Research by Dailami et al. (2024) shows that students experience an improvement in understanding the structure of explanations when they carry out analysis activities on a given problem [24]. These results are in line with this study because during PBL learning, students are faced with problems that they must understand first before looking for solutions, so they are used to identifying causal relationships in texts.

Problem-based learning has also been proven to improve reading comprehension skills through the development of critical and creative thinking skills. Research by Apriyani and Alberida (2023) explains that PBL can improve students' argumentative skills because they must understand the problem first before giving an opinion [25]. Research by Ishlahul'Adilah and Haryanti (2023) added that PBL can improve creative thinking skills because students are given the opportunity to find alternative problem-solving from various sources of information [26]. In this study, students' ability to find important information from texts also improved because they were used to analyzing the problems given at the beginning of learning.

Previous research on explanatory text learning also strengthens the results of this study. Susanti et al. (2023) show that PBL learning can improve students' ability to write explanatory texts, as this model provides opportunities for students to explore information and understand explanatory structures in more depth [27]. Handayani et al. (2023) found that students often have difficulties in understanding the structure and language of explanatory texts, but these

difficulties can be overcome through learning that provides space for students to practice finding key ideas and actively compiling information [28]. The findings are very consistent with the results of this study because students showed an improvement in their ability to understand the content of reading after participating in problem-based learning.

The use of supporting media can also strengthen the effectiveness of PBL in explanatory text learning. Research by Sachintania and Nugraha (2023) explains that the use of media such as Articulate Storyline combined with PBL can improve students' understanding of the content and linguistic characteristics of explanatory texts [29]. Although this study did not use these media, the improvement of reading comprehension skills still occurred because the structure of PBL activities allowed students to build understanding through discussion, analysis, and problem-solving activities.

Comparison of the results of this study with other studies shows that PBL not only affects the reading aspect, but also on the ability to think in general. Research by Boangmanalu and Nasution (2023) shows that PBL can improve students' numeracy skills because students practice processing information obtained from given problems [30]. In addition, research by Fatharani et al. (2024) shows that PBL can improve mathematical connection abilities because the learning activities carried out encourage students to connect the various information they learn [31]. Although this study focused on reading comprehension, the results are still in line with the study because the process of reading comprehension also requires students to connect information and process data critically.

Overall, the results of the study show that Problem Based Learning is an effective learning model in improving students' reading comprehension skills. Students become more active in reading, understanding the structure of the text, identifying important information, and connecting cause-and-effect relationships in reading. Learning that was previously passive has become more meaningful because students are directly involved in the process of finding answers to the problems they face. Based on the overall findings, it can be concluded that PBL not only helps students understand explanatory texts, but also develops critical thinking and analytical skills that are indispensable in reading comprehension activities.

IV. CONCLUSION

The results of this study show that the Problem Based Learning model has a significant influence on the ability to read and comprehend explanatory texts in grade VIII students of SMP Negeri 7 Jember. All classes that were treated experienced a fairly high increase in posttest scores compared to pretest scores, showing that problem-based learning can help students understand the content of the text more deeply. This improvement shows that PBL can be an alternative learning that can help students to be more active in finding information and developing their understanding of reading.

Learning using PBL makes students more engaged in reading activities because they are trained to understand problems, look for relevant information, and draw conclusions

based on the results of the analysis. This process allows students to better understand the causal relationships in explanatory texts. In addition, discussion and group work activities carried out in PBL learning also help students exchange opinions so that their understanding is stronger.

Based on the results of the research, there are several suggestions that can be given. First, teachers are expected to be able to apply the Problem Based Learning model in explanatory text learning so that students can be more active in understanding the content of reading. Second, schools can support the use of this learning model by providing learning facilities that support discussion and problem-solving activities. Third, researchers can further develop this research by examining the influence of PBL on other types of texts or combining it with digital learning media so that the results obtained are more diverse. Thus, this research is expected to contribute to the development of Indonesian language learning in secondary schools.

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